DOCUMENT RESUME

ED 424 556 CG 028 899

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TITLE College Students' Ability To Reason about Personally Relevant Issues.

PUB DATE 1998-08-00

NOTE 17p.; Paper presented at the American Psychological Association Annual Convention (106th, San Francisco, CA, August 14-18, 1998).

PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS Cognitive Development; *College Students; *Decision Making Skills; Higher Education; Logical Thinking; *Thinking Skills

ABSTRACT

This study examined college students' ability to reason about everyday issues. Previous studies are reviewed and it is concluded that issues studied in the past were often not truly "everyday." For this study, 30 students responded to 10 issues, including 4 personal and 4 personally relevant political issues. Students circled one of two positions on the issue and were asked to give arguments for the position (pro arguments), followed by arguments against it (con arguments), or vice versa. Responses were coded in three ways: a count of sentences written, a count of different pro and con arguments, and an expert rating for quality of arguments. Results for each comparison are presented, and findings are discussed and related to other research on the topic. Observations from reading students' answers are offered, and future directions for research on informal reasoning are proposed. Experimental questions and sample issues are appended. (Contains 2 figures, 3 tables, and 13 references.) (EMK)

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ED 424 556

COLLEGE STUDENTS' ABILITY TO REASON ABOUT PERSONALLY RELEVANT ISSUES

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Paper Presented at
The 1998 American Psychological Association
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The authors would like to thank Debbie Kermer and Darin Arsenault for their participation and data judgements in the project.

CG028899

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ABSTRACT

This study examined college students' ability to reason about everyday issues in a variation of earlier studies by Perkins (e.g., 1985). Thirty students responded to 10 issues, including 4 personal and 4 personally relevant political issues. Students circled one of two positions on the issue, and were asked to give arguments for the position (pro arguments), followed by arguments against it (con arguments), or vice versa. Students gave fewer pro arguments than reported by Perkins. These students, however, gave approximately equal number of con and pro arguments. Pro arguments were judged to be significantly more convincing than the con arguments. No relationships were found between either number of arguments or convincingness of those arguments on the one hand, and such variables as rated priority of issue (to students) and amount of outside time spend considering such arguments on the other. These results are related to a general discussion of the nature of informal reasoning.

INTRODUCTION

An issue that is clearly of interest to most educators, as well as to the public at large, is how well people reason about everyday issues. Certainly one of the aims of higher education is to provide students with the thinking skills to deal with everyday problems; and in fact, in recent years there has been a growing movement (e.g., Resnick, 1987a, b; Voss, Blais, Means, Greene, & Ahwesh, 1989) to integrate everyday knowledge and reasoning with academic instruction.

At the same time, a variety of studies have pointed to the flaws and limitations of everyday reasoning. For example, the classic research by Tversky and Kahneman (1974) has pointed to the errors and biases in everyday judgment (though see Gigerenzer,1991). Perkins and his associates (e.g., Perkins, 1985, 1989; Perkins, Allen, & Hafner, 1983; Perkins, Farady, & Bushey, 1991) have also presented evidence suggesting that neither high school nor college students are really capable of generating arguments for a position in informal reasoning. In particular, Perkins et al. have argued that people are deficient in generating *counter* or con arguments to their own position. Perkins et al. (1983) attribute these deficiencies to the fact that we usually settle for a "makes sense epistemology," rather than pursuing a "critical epistemology." That is, we tend to be satisfied with a set of arguments or a case that makes sense, that has some sort of internal coherence and is convincing, rather than testing out the validity of that case against other possible positions.

In our own research (e.g., Woll & Loukides, 1989) we have found similar results for political arguments. In a larger study of political expertise, we included a measure of political reasoning in which participants were asked to respond to a set of hypothetical political dilemmas such as how the United States should respond to a takeover of the Philippines by the Communist party. In this study Introductory Psychology students scored very poorly, and significantly lower than political campaign workers and political science students on several different measures of reasoning, including one that assessed these students' ability to take alternative viewpoints into account.

One possible feature of these and other studies of so-called informal reasoning (see Voss, 1991; Voss. et al, 1989) is that, for the most part, the material used has not really been "everyday." For example, Perkins et al. used questions such as "Would providing more money for public schools significantly improve the quality of teaching and learning?" (Perkins et al., 1991, p. 87), whereas Voss et al. used questions about economic issues, e.g., "If health care costs rise considerably, what effect, if any, do you think this would have on the size of the federal deficit, and why?" (Voss et al., 1989, p. 226). Perhaps these sorts of issues are not ones that most college students know or think much about since they are not of immediate personal relevance to them (see Perkins, 1985, for a further discussion). It is possible that when students have to deal with issues that are of great personal significance to them, they may do better at generating arguments, pro and con, than has been found in these other studies. Alternatively, perhaps when considering personally relevant issues, individuals may be even more likely to generate "my side" arguments at the expense of "other-side" arguments (Perkins et al., 1991).

In the present study we presented a set of questions to participants which dealt with either personal or political issues. In both cases the issues were "vexed" (Perkins, 1985), in the sense that there were two conflicting sides, and required participants to give both pro and con arguments. The question at issue was

whether participants would show the same discrepancy between pro and con arguments reported by Perkins for truly everyday kinds of issues.

METHOD

Participants

Thirty students in an upper-division psychology course at California State University, Fullerton served as participants in this study. All students received extra credit points toward course credit for their participation.

Questionnaire

All participants received one of two versions of a 10-item questionnaire. Each version contained 4 personal and 4 political issues presented in counterbalanced order. An example of a personal issue was "Let's say you catch your boyfriend/girlfriend (or spouse) cheating on you. S/he apologizes and asks you to take her/him back?" An example of a political issue was "An issue that has been hotly debated in recent years is the question of freedom of speech on the Internet, which would affect the ability to have pornography or the ability to display certain web sites. Do you think that some control needs to be instituted on the Internet?" (see table 1 for a list of all the issues). All 16 of these items were presented in an earlier study (Navarrete, Woll, Marcoux, & Sussman, 1998) which included some 30 issues (15 items on each of two versions). From this earlier study it was determined that participants could only complete some 10 issues in 2 hours. Only those issues which produced answers on both sides of the issue and which seemed to spark students' interests were included in this second study. The 16 resulting issues are given in Table 1.

The ninth question in both booklets was a concretized version of the classic Heinz problem taken from Kohlberg (1969). This item was included in order to have at least one well established issue in each of the booklets to which participants could respond, and to compare participants' responses to this clearly hypothetical, impersonal problem with the more personal issues in the rest of the questionnaire. Finally, the tenth and final question consisted of an item taken from the other version of the questionnaire. This item was included to provide a check on the equivalence of the two groups of respondents.

For each question, participants were first instructed to indicate their position by circling one of two different, opposing statements, e.g. "I would take my boyfriend/girlfriend (or spouse) back," or "I would not take my boyfriend/girlfriend (or spouse) back" (see table 2 for a sample of the type of answer given). These participants were then asked to either give arguments in favor of that position, followed by arguments against that position, or vice versa. The order of pro versus con arguments was counterbalanced within a booklet.

Scoring

Following Perkins (e.g., 1985), participants' responses were coded in three different ways. First, a count was made of the sheer number of sentences written for each issue for pro and separately for con arguments. Second, a count was made of the number of different pro and con arguments included for each issue, where an argument or line of argument was defined, following Perkins, as "distinctly different ways of arguing the point in question" (1985, p. 564). Thus, as in Perkins' research, it was possible for our participants to elaborate extensively on a point, and thus to increase his/her sentence total, without necessarily getting credit for an additional argument.

Finally, a separate expert judge with experience in judging written arguments was asked to rate the quality of the arguments on a 5-point scale, where quality reflected meaningfulness, clarity, and a logical sequence of points. This judge was instructed to use the entire 5-point scale in judging the arguments in case many participants not seem to live up to a rigorous or high standard of argumentation.

Procedure

Participants were given a full page to give pro arguments and a full page to give their con arguments. They were instructed to write five or more sentences for each side. Participants were given two hours to give their arguments.

RESULTS

Measures of Quantity

Our first comparison was in terms of the sheer number of sentences and arguments included in participants' answers for each of the two versions or booklets. As a preliminary analysis, we compared the number of sentences and arguments for the two booklets to see if the two gave comparable results. This analysis indicated that the two booklets overall did not differ on either of these two measures (M = 4.83 versus 4.27 for sentences in booklet 1 versus booklet 2, and M = 2.16 versus 2.11 was found for arguments). Therefore, in the analyses to follow, the results from the two booklets will be combined. In addition, no different answers to the ninth question or reference question versus answers to the other questions for either pro and con (M = 1.80 versus 2.23, and M = 2.30 versus M = 2.07 for pro and con arguments for book 1) and (M = 2.00 versus 2.12, and M = 1.86 versus M = 2.15 for book 2).

Two 2 (position: pro versus con) X 2 types of issue (i.e., personal versus political) analyses of variance were conducted for number of sentences and number of arguments. Participants wrote significantly more sentences for the pro side (M = 4.80) than for the con side (M = 4.22), $F(1, 29) = 18.68$, $p < .01$. A significant main effect was also found for personal (M = 2.19) versus political (M = 2.06), $F(1, 29) = 140.52$, $p < .01$. Interestingly enough, an interaction between the position on the issue and type of issue was also found to be significant, $F(1, 29) = 10.59$, $p < .003$ (see Table 3). The source of this interaction seems to be the greater number of sentences for con arguments with the political issues in comparison with the more personal ones.

On the other hand, there was no significant difference between the number of pro (M = 2.14) and con arguments (M = 2.12), type of issue, or the interaction of the two. Thus, it appears that participants wrote more for the pro side, but did not include more distinct arguments in their pro answers.

A comparison of the number of arguments for each of the specific issues in each of the two booklets is given in Figure 1. As is apparent from these graphs, issues 1, 2, 4 (i.e., the profession worth pursuing, the English as an official language issue, and freedom of speech on the internet) in booklet 1, and issues 1 and 6 (i.e., US policing other countries, and the withdrawing of social security benefits from non-citizens) in booklet 2 showed more pro than con arguments, whereas issue 9 (i.e., the Heinz question) and 4 (i.e., the association of favorite food with cancer) in booklet 2 showed more con arguments.

Quality of Arguments

Another 2 X 2 ANOVA was conducted for rated quality of arguments. Overall, the judged quality of arguments was above average (M = 3.56). Pro arguments were given significantly higher ratings (M = 3.65) than con arguments (3.46), $F(1, 29) = 89.72$, $p < .01$. Differences were also found between personal and political issues (M = 2.06 versus 2.19), $F(1, 29) = 7.36$, $p < .01$. The interaction between these two factors was not significant.

Correlations with Individual Difference Measures

Correlations were calculated between two different variables (i.e. rated personal relevance of the issue, amount of outside time spent thinking about the issue) and both number of pro and con arguments and quality of these two types of arguments. As expected, the two covariates, i.e., personal relevance and time spent thinking about an issue, were highly correlated, ($r = .71$, $p < .001$. However, all of the other correlations were low (range = .02-.23) and nonsignificant.

DISCUSSION

Our results are consistent with those reported by Perkins in one way, but contrary to his results in another. Specifically, like Perkins, we found that college students did not give many overall arguments on either personal or political issues. In fact, our participants gave even fewer arguments than those reported by Perkins (e.g., 1985) for undergraduate students (i.e., 2.13 versus 2.9). It should be noted that this present figure is also lower than those reported earlier (Navarrete et al., 1998) for a pilot sample. Of course, that pilot study sampled a broader range of issues and was run under slightly different conditions, i.e., in smaller groups; and it is possible that there were other kinds of differences between our study and those of Perkins, e.g., a different group of students, a slightly different definition of an argument. The safest conclusion is that personal and political issues do not elicit any more arguments than do the less personal ones used by Perkins.

The most interesting finding in this study, though, is that when dealing with personal and (relevant) political issues, participants are able to generate as many con arguments as pro arguments, even though they wrote more in general for the former, and these pro arguments were judged to be of higher quality than their con arguments. By way of comparison, our students provided nearly twice as many con arguments (2.12) as did Perkins' students (1.1). This result at least suggests that students are sometimes able to provide con arguments, and are in fact better able to argue for both sides of an issue when that issue has greater personal relevance to them (although 2.12 arguments is not something to be particularly proud of). Clearly more work needs to be done on this issue

The other interesting finding is that neither quantity nor quality of arguments was related to rated personal relevance or to prior time spent thinking about the issue. These findings argue against Perkins et al.'s (1991) suggestion that higher numbers of arguments in one of his group could be accounted for by the great deal of time that participants had spent thinking about a set of issues. Interestingly, neither personal relevance nor prior thought predicted the number or quality of arguments, although arguments about personal issues were rated as higher in quality than political ones.

One observation made in reading through students' answers is that a large proportion of their arguments were fairly standard, predictable ones that they could have heard from friends, family, and the media. It is therefore unclear to what degree our participants were actually formulating (or reformulating) their arguments at the time of testing versus simply parroting back old material that they remembered from previous experiences. (It should be noted that in the Woll & Louklides, 1989, study, an explicit attempt was made to include topics for which participants could not give a stock, partyline answer; and in that study, of course, we did not find effective reasoning for most college students.) An interesting topic that is currently being pursued is what happens when students are given issues that are of clear personal significance to them, but to which it is unlikely that they have given much thought, e.g., what they would do if a good friend and business partner absconded with their joint company finances and then pleaded for forgiveness, or what they would do if a loved one was ill and needed their (students') care even though that would mean that the students would have to drop out of school.

In conclusion, we believe that the topic of informal, everyday reasoning is a topic that merits further research, particularly insofar as higher education is designed to improve such reasoning. The present study is a first step in that direction.

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Table 1
Experimental Questions

Booklet 1

1. Suppose that you are particularly interested in a profession that you know will not ever pay you very much. Would such a profession be worth pursuing? First state your position. Then state the counter arguments against your position, followed by arguments for your position.

2. There has been a good deal of debate recently on whether English should be established as the official language of the United States. Do you feel English should be made the official language? Please give evidence to support your position, and then write down arguments for the counter position.

3. Currently there are campus areas on many colleges where alcoholic beverages, such as beer are sold. Should selling alcoholic beverages be allowed or should they be banned from college campuses? State your position, and then give the counter arguments against your position first, followed by arguments for your position on the issue.

4. An issue that has been hotly debated in recent years is the question of freedom of speech on the Internet, which would affect the ability to have pornography or the ability to display certain web sites. Do you think that some control needs to be instituted on the Internet? Provide arguments for your position followed by counter arguments against your position.

5. In the world of sports, males are given more attention and are provided with higher salaries than women who participate in similar sporting events, such as basketball and golf. Should sport salaries be made equal for women as well? Provide arguments for your position, followed by counter arguments against your position.

6. Recently there has been a great deal of debate over whether homosexual couples should be allowed to have or to rear children. Do you think homosexual couples should have the right to bear or rear children? Provide counter arguments against your position, followed by arguments for your position.

7. Last year there was a proposition (and subsequent legal challenges) to eliminate affirmative action. What is your position on this issue? Give the counter arguments against your position first, followed by arguments in favor of your position on the issue.

8. Suppose that you are running late for an important appointment. As you speed down the freeway to get to that appointment. You noticed that an accident has just occurred, and someone is trying to flag you down. Would you stop to help the victims or continue driving to make your appointment? Provide arguments for your position, followed by counter arguments against your position.

Booklet 2

1. Currently the United States is increasingly involved in policing or maintaining peace when conflicts occur between foreign countries. Do you think the United States should be playing that role? Provide arguments for your position, followed by counter arguments against your position.

2. You get up in the morning and discover that you are going to be late for a class you are not fond of. Do you rush to get ready or do you miss your first class. First, state your position. Then state the counter arguments against the position, followed by arguments for your position.

3. The US government currently maintains a good deal of classified information for purposes of national security. Should the federal government have the right to withhold information from the general public?
Provide arguments for your position, followed by counter arguments against your position.

4. Suppose that you have recently heard that a particular food you enjoy eating has been found to be associated with cancer in laboratory animals. Would you continue to eat your favorite food? First, state your position. Then state the counter arguments against the position, followed by arguments for your position.

5. In recent elections there has been lots of attention given to the personal lives of political candidates, including information about their past and/or present indiscretions. Do you think the public should be informed of this information? Provide arguments for your position, followed by counter arguments against your position.

6. Currently there is pressure from the federal government to make people who are legal residences become US citizens. Programs such as social security benefits are being threatened to be withdrawn unless people change their legal status and become US citizens. Should the federal government have the right to remove benefits from people who are legal residents? Provide arguments for your position, followed by counter arguments against your position.

7. Let's say you catch your boyfriend/girlfriend (or spouse) cheating on you. S/he apologizes and asks you to take her/him back. First, state your position on this issue. Then state the counter arguments against the position, followed by arguments for your position.

8. In the near future, genetic research may help us to gain a greater understanding of genetic codes and allow us to alter individuals' genetic make up or the genetic makeup of unborn infants. Do you feel we should be able to control genes? What would your position be on this issue? Give arguments to support your position, followed by counter arguments.

Table 2

SAMPLE ANSWER OF A POLITICAL ISSUE

An issue that has been hotly debated in recent years is the question of freedom of speech on the Internet, which would affect the ability to have pornography or the ability to display certain web sites. Do you think that some control needs to be instituted on the Internet? Provide arguments against your position followed by arguments for your position.

Position (circle one):

1. The internet should not be controlled or censored.
(2.) The internet should have some control or regulation.

Con arguments (against your position):

"The internet should not be controlled or censored because it is one way of expressing freedom of speech. People who can't do it publicly are taking advantage of the internet. Thus if the internet is also controlled or censored, it's not fair for the people who want to express their opinion."

Pro arguments (for your position):

"The internet should not have some control or regulation because under aged people are getting influenced by the internet. If it is something positive, I think it is ok. But under aged kids are looking at pornography or some material that should be censored. So for the kids sake, I think some material should be censored."

(Number of pro arguments = 2, Number of con arguments = 1)
(Quality of pro arguments = 4, Quality of con argument = 3)

SAMPLE ANSWER OF A PERSONAL ISSUE

Let's say you catch your boyfriend/girlfriend (or spouse) cheating on you. S/he apologizes and asks you to take her/him back. First, state your position on this issue. Then state the counter arguments against the position, followed by arguments for your position.

Position (circle one):

1. I would take my boyfriend/girlfriend (or spouse) back.
(2.) I would not take my boyfriend/girlfriend (or spouse) back.

Pro arguments (for your position):

"I would not take my girlfriend back. If she is cheating on me how do I know this is not the first time? Trust is a hard thing to gain back after this and I would constantly be thinking about this which would cause more problems in the relationship. Once I have been lied to it is hard for me to forgive. If she did it once she will probably do it again. So I should find someone else"

Con arguments (against your position):

"I would take my girlfriend back. If she is truly sorry, I can forgive her. Everyone deserves a second chance. People make mistakes. If she has learned she was wrong and really wants to be with me it could make our relationship stronger."

(Number of pro arguments = 2, Number of con arguments = 3)
(Quality of pro arguments = 4, Quality of con argument = 3)

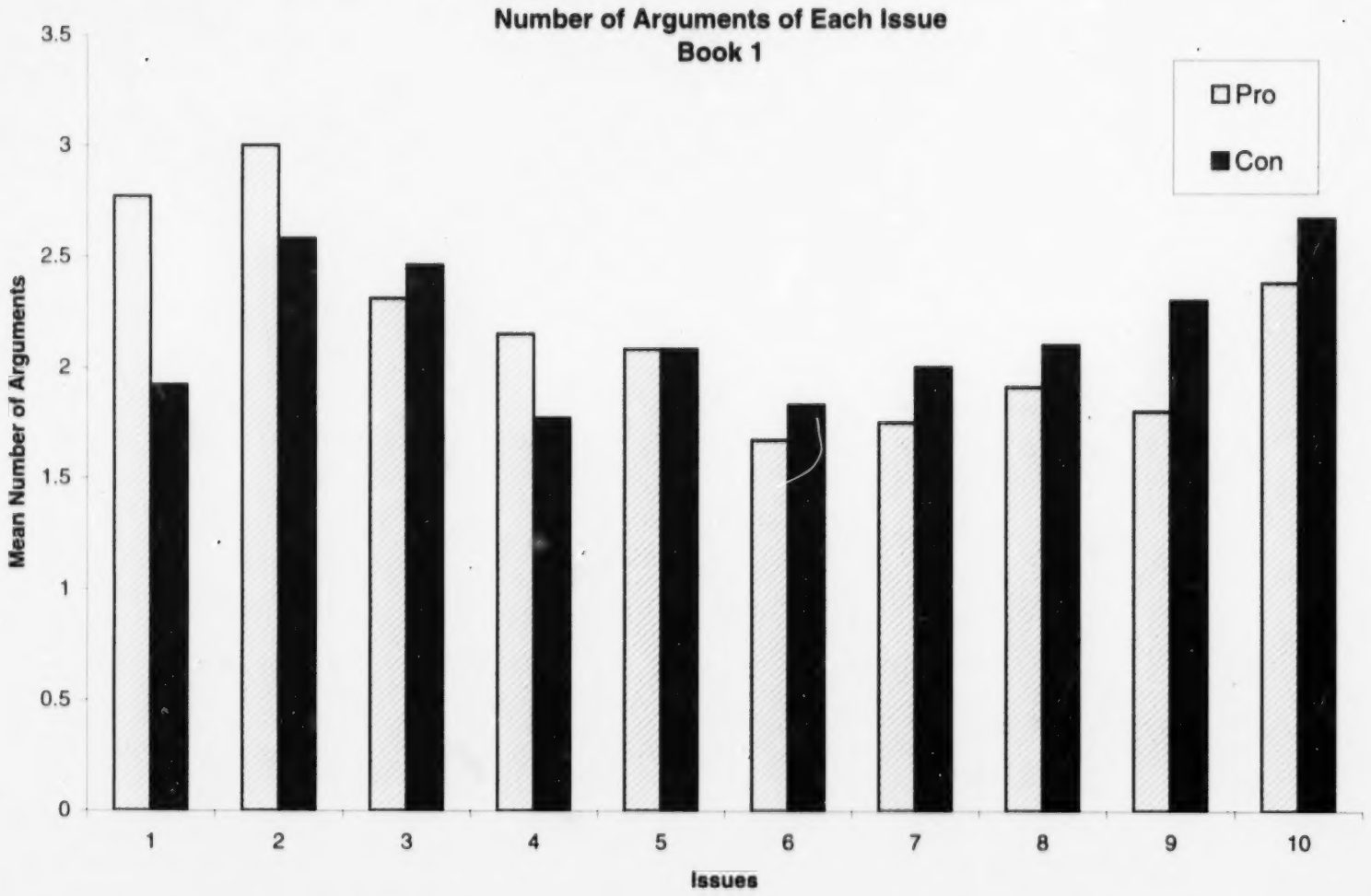
Table 3

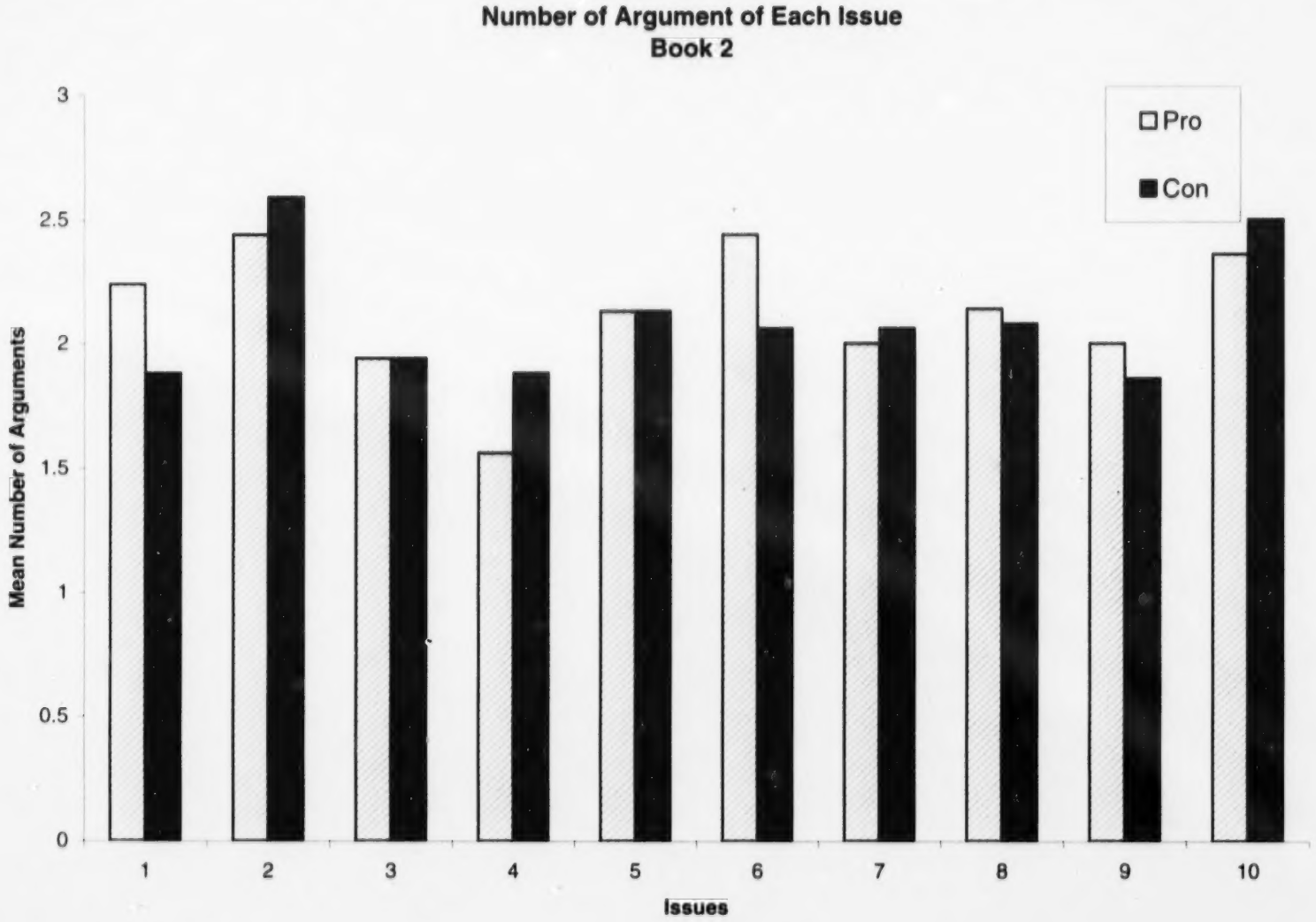
Type of Issues and Position of Issues (N = 30)

Number of Sentences

	Personal Issues	Political Issues
	Mean	Mean
Pro (for the issue)	5.21	5.23
Con (against the issue)	4.54	4.61

Figure 1


Number of Arguments of Each Issue
Book 1
Pro
Con
Mean Number of Arguments
3.5
3
2.5
2
1.5
1
0.5
0
1
2
3
4
5
6
7
8
9
10
Issues



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